Title (en)

Process for the preparation of enantiomers of alpha-amino acid derivatives by asymmetric hydrogenation.

Title (de)

Verfahren zur Herstellung von Alpha-Aminosäurederivaten durch asymmetrische Hydrierung.

Title (fr)

Procédé pour la préparation des dérivés de alpha-aminoacides par hydrogénation asymétrique.

Publication

EP 0498507 A1 19920812 (EN)

Application

EP 92200311 A 19920204

Priority

DE 4103759 A 19910205

Abstract (en)

The inventor relates to a process for the preparation of (S)- and (R)- alpha -amino acid dervatives by asymmetric hydrogenation starting from a substrate of the formula I <CHEM> in which R<1> denotes hydrogen or an alkyl group R<2> denotes a protecting group and R<3> denotes hydrogen, an alkyl, aryl, aralkyl, alkaryl, heteroalkyl or heteroaryl group, which is hydrogenated in the presence of a rhodium(I)complex catalyst of the formula II /Rh(Z)(Lk)/<+>A<-> II in which Rh denotes rhodium Z denotes a chiral chelating ligand with two trivalent phosphorous atoms as coordination partners for a bond to rhodium L denotes a solvent molecule k denotes 0, 1, 2, or 3 and A<-> denotes an anion of a weakly coordinating acid, such as BF4<->, ClO4<->, SO4H<->, PF6<->, R<4>-COO<->, or R<4>SO3<->, where R<4> denotes a fluorinated alkyl or aryl group into an alpha -amino acid derivative of the formula III <CHEM> in which R<1> denotes hydrogen or an alkyl group R<2> denotes a protecting group and R<3> denotes hydrogen, an alkyl, aryl, aralkyl, alkaryl, heteroalkyl or heteroaryl group in which process an amphiphilic substance of the formula IV A-E IV in which A denotes a nonpolar alkyl chain with 5 to 20 carbon atoms or a glycerol dialkylether group and E denotes a polar (hydrophilic)group, such as -O-SO3Na, -SO3Na, -O(CH2CH2O)nH or -OP(-)O2/OCH2CH2N(+)(CH3)3/, where n is a number between 3 and 15. The hydrogenation can be carried out in a polar or nonpolar solvent.

IPC 1-7

C07C 231/18

IPC 8 full level

C07C 231/18 (2006.01)

CPC (source: EP)

C07C 231/18 (2013.01); Y02P 20/55 (2015.11)

Citation (search report)

- [AD] JOURNAL OF ORGANIC CHEMISTRY, vol. 46, no. 14, 3rd July 1981, pages 2861-2867, Washington, DC, US; R.G. NUZZO et al.: "Synthesis of functional chelating diphosphines containing the bis[2-(diphenylphosphino)ethyl]amino moeity and the use of these materials in the preparation of water-soluble diphosphine complexes of transition metals"
- [AD] JOURNAL OF ORGANOMETALLIC CHEMISTRY, vol. 370, 1989, pages 277-284, Lausanne, CH; L. LECOMTE et al.: "Chiral sulphonated phosphines. II. Influence of water on the enantioselectivity in the reduction of dehydro-aminoacids"
- [AD] ORGANOMETALLICS, vol. 8, no. 2, 1989, pages 542-547, Washington, DC, US; Y. AMRANI et al.: "Chiral sulfonated phosphines. Syntheses and use as ligands in asymmetric hydrogenation using an aqueous-organic two-phase solvent system"

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CN103429567A; FR2853316A1; US5475146A; US5574171A; US5481006A; US5510507A; WO2004087661A1

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